

INSTRUMENT ACCESS DEVICE

This application is a Continuation of U.S. application Ser. No. 12/694,888, filed Jan. 7, 2010, which is a Continuation-In-Part of U.S. application Ser. No. 12/133,827, filed Jun. 5, 2008, now U.S. Pat. No. 8,187,178, which claims the benefit of U.S. Provisional Application Nos. 60/924,918, filed Jun. 5, 2007, 60/935,625, filed Aug. 22, 2007, and 60/996,760, filed Dec. 4, 2007.

This application also claims the benefit of U.S. Provisional Application Nos. 61/147,625 filed on Jan. 27, 2009, and 61/147,613 filed on Jan. 27, 2009.

The entire contents of all of these applications are incorporated herein by reference.

INTRODUCTION

This invention relates to an instrument insertion device and an instrument access system incorporating the instrument insertion device. The invention also relates to an instrument access device.

STATEMENTS OF INVENTION

The device of the invention comprises at least one instrument seal to effect a seal around at least one instrument extended through the device, the instrument seal being configured to be arranged in sealing relationship to a body of a patient. The device preferably has a distal anchoring member for location within a wound interior. The device preferably also has a retractor member extending proximally from the distal anchoring member to retract laterally the sides of a wound opening. Preferably the device comprises a first instrument seal to effect a seal around a first instrument extended through the device, and a second instrument seal to effect a seal around a second instrument extended through the device. By providing the two seal arrangement, this ensures that insertion or manipulation or removal of the second instrument does not adversely effect the seal around the first instrument. The device may comprise a third instrument seal to effect a seal around a third instrument extended through the device. The first instrument seal may be spaced apart from the second instrument seal. The first instrument seal may be formed separately from the second instrument seal. The first instrument seal may have a larger radial dimension than the second instrument seal. The instrument seal may be of a gelatinous elastomeric material.

In one case the device comprises a proximal member for location externally of a wound opening. The retractor member may extend at least between the distal anchoring member and the proximal member. The retractor member may extend in two layers between the distal anchoring member and the proximal member. A first end portion of the retractor member may be fixed to the proximal member. The retractor member may be movable relative to the distal anchoring member. A second end portion of the retractor member may be movable relative to the proximal member. The retractor member may extend distally from the proximal member to the distal anchoring member, may be looped around the distal anchoring member, and may extend proximally from the distal anchoring member to the proximal member. The proximal member may comprise an inner part and an outer part. The retractor member may extend between the inner part and the outer part.

In another embodiment the instrument seal is spaced proximally of the proximal member. The device may comprise at least one connector member to connect the proximal member

to the at least one instrument seal. The connector member facilitates a degree of lateral movement of the instrument while maintaining the seal. The connector member may comprise a sleeve. The connector member may be of a laterally flexible material. The connector member may be of a longitudinally rigid material. The connector member may be of a rubber-like material. The connector member may be of a longitudinally flexible material.

In another case the instrument seal is mounted to the connector member. The instrument seal may be releasably mounted to the connector member. The instrument seal may comprise a mounting part to mount the instrument seal to the connector member. The mounting part may be of a rigid material. The instrument seal may comprise a sealing part to effect a seal around an instrument extended through the device, the sealing part being overmoulded over at least part of the mounting part.

In one embodiment the connector member is mounted to the proximal member. The connector member may be releasably mounted to the proximal member. The connector member may be mounted to the proximal member in an interference fit arrangement. The connector member may be mounted to the proximal member in a snap-fit arrangement. The connector member may comprise at least one protrusion for engagement with the proximal member. The protrusion can be resilient. The device may comprise a clamp member to clamp the connector member to the proximal member. The connector member may be inclined relative to the proximal member. The device may comprise a reinforcement element to reinforce the connector member. The reinforcement element may be of a rigid material. The reinforcement element may be embedded within the connector member.

The invention also provides a method of performing a surgical procedure utilising the device of the invention.

According to the invention there is provided a method of performing a surgical procedure comprising the steps of:

providing an instrument access device comprising at least one instrument seal, a distal anchoring member, and a retractor member extending proximally from the distal anchoring member;

inserting the distal anchoring member within the wound interior; retracting laterally the sides of the wound opening using the retracting member;

inserting one or more surgical instruments through the instrument seal into the wound opening;

severing one or more body parts in the wound interior; and removing the one or more body parts through the wound opening.

In one embodiment of the invention the method comprises the step of creating the wound opening. The wound opening may be created by creating a skin incision, and subsequently forcing tissue apart. The wound opening may be created using a Hasson cut-down incision.

In one case the method comprises the step of inserting an instrument access device at least partially through the wound opening. The instrument access device may be inserted at least partially through the wound opening using an introducer device. The method may comprise the step of inserting at least part of the instrument access device into the introducer device. The method may comprise the step of inserting the introducer device at least partially through the wound opening. The method may comprise the step of ejecting at least part of the instrument access device from the introducer device within the wound interior. The method may comprise the step of removing the introducer device from the wound opening.